

E1  
3. (Twice Amended) A semiconductor device with a multilayered structure comprising a copper film interconnect formed on one primary surface of a semiconductor substrate, a neighboring film formed in contact with said copper film interconnect, and a dielectric film positioned such that the neighboring film is between the dielectric film and the copper film interconnect, wherein said neighboring film is formed of ruthenium as the primary constituent element, and is formed through sputtering, and said copper film interconnect has a multilayered structure comprising a copper film as formed through sputtering and a copper film as formed through plating or chemical vapor deposition.

E2  
6. (Thrice Amended) A semiconductor device with a structure comprising a copper film interconnect formed on one primary surface of a semiconductor substrate, a neighboring film formed in contact with said copper film interconnect, a plug formed in contact with said neighboring film, and a diffusion barrier formed in contact with said plug and said neighboring film, wherein said neighboring film includes a ruthenium film, said plug is formed of a ruthenium film, said diffusion barrier is formed of a titanium nitride film, and at least one of said copper film interconnect and said neighboring film is a film formed through sputtering, wherein the neighboring film and the plug substantially prevent voids due to electromigration of the copper or platinum of the copper or platinum film.

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F1 7

E3

30. (Amended) A semiconductor device having a layered interconnection structure including a copper film formed overlying a surface of a semiconductor substrate, and having a dielectric film overlying the surface of the semiconductor substrate, wherein the layered interconnection structure includes the copper film and a neighboring film adjacent the copper film, the neighboring film containing a material selected from a group consisting of rhodium, ruthenium, iridium, osmium and platinum as the primary constituent element, at least one of (a) the copper film and (b) the neighboring film being a film made by physical vapor deposition, and wherein the dielectric film is positioned such that the neighboring film is between the copper film and the dielectric film.

36. (Amended) A semiconductor device having a layered interconnection structure including a copper film overlying a surface of a semiconductor substrate, and having a dielectric film overlying the surface of the semiconductor substrate, wherein the layered interconnection structure includes the copper film and a neighboring film located at at least one of (a) overlying the copper film and (b) between the copper film and the substrate, the neighboring film including a material selected from a group consisting of rhodium, ruthenium, iridium, osmium and platinum as the primary constituent element, at least one of (a) the copper film and (b) the neighboring film being a film made

E4

by physical vapor deposition, and wherein the dielectric film is positioned such that the neighboring film is between the copper film and the dielectric film.

E4 37. (Amended) A semiconductor device having a layered interconnection structure including a copper film or a platinum film formed overlying a surface of a semiconductor substrate, wherein the layered interconnection structure includes the copper film or the platinum film, and a neighboring film located at at least one of (a) overlying the copper film or the platinum film and (b) between the copper film or the platinum film and the substrate, the neighboring film including an element selected from a first group consisting of rhodium, ruthenium, iridium, osmium and platinum when the layered interconnection structure includes the copper film and the neighboring film including an element selected from a group consisting of rhodium, ruthenium, iridium and osmium when the layered interconnection structure includes the platinum film, at least one of (a) the copper film or platinum film and (b) the neighboring film being a film made by physical vapor deposition, wherein the neighboring film substantially prevents voids due to electromigration of platinum when the layered interconnection includes the platinum film and the neighboring film substantially prevents voids due to electromigration of copper when the layered interconnection includes the copper film.